

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1 to 15 (*cancelled*)

16. (*currently amended*) A radiopharmaceutical of the formula:

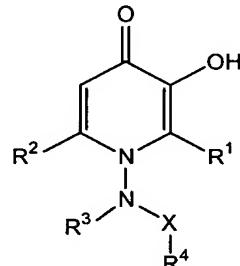


and or pharmaceutically acceptable salt thereof, wherein:

M is a radionuclide selected from: ^{64}Cu , ^{67}Cu , ^{67}Ga , ^{68}Ga , ^{99m}Tc , ^{111}In , ^{90}Y , ^{149}Pr , ^{153}Sm , ^{159}Gd , ^{166}Ho , ^{169}Yb , ^{177}Lu , ^{186}Re , and ^{188}Re ;

C_h is an N-substituted 3-hydroxy-4-pyridinone compound of the formula

(I):



(I)

or a pharmaceutically acceptable salt thereof, or prodrug thereof,
wherein:

X is selected from the group: CH₂, C(O), C(S), P(O)R³R⁴, SO₂, C(=NH)NH, C(O)NH, and C(S)NH;

R¹ and R² are independently selected from: H, C₁-C₁₀ alkyl substituted with 0-5 R⁵, C₂-C₁₀ alkenyl substituted with 0-5 R⁵, aryl substituted with 0-3 R⁵, and heteroaryl substituted with 0-3 R⁵;

R³ and R⁴ are independently selected from: C₁-C₁₀ alkyl substituted with 0-5 R⁵, C₂-C₁₀ alkenyl substituted with 0-5 R⁵, aryl substituted with 0-3 R⁵, and heteroaryl substituted with 0-3 R⁵, or R³ and R⁴ may be taken together to form a C₅-C₇ cyclic alkyl group optionally interrupted with O or NR⁶;

R⁵ is selected from: OH, C(=O)R⁶, C(=O)OR⁶, C(=O)NR⁶R⁷, PO(OR⁶)(OR⁷), and S(O)₂OR⁶;

R⁶ and R⁷ are independently selected from: H, C₁-C₁₀ alkyl, and aryl; and n is 2 or 3;

X is CH₂;

R¹ is H;

R² is methyl;

R³ and R⁴ are taken together form a 6-membered cyclic piperidine ring.

17. (*currently amended*) The radiopharmaceutical according to claim 16 wherein:

M is a radionuclide selected from: ⁶⁷Ga, ⁶⁸Ga, ^{99m}Tc, and ¹¹¹In; and

n is 3.

18. (*currently amended*) The radiopharmaceutical according to claim 16 wherein:

M is ¹¹¹In; and

n is 3.

19. (*currently amended*) The radiopharmaceutical according to claim 16 wherein:

M is ¹¹¹In;

n is 3;

X is CH₂;

R¹ is H;

R² is methyl; and

R³ and R⁴ are taken together form a 6-membered cyclic piperidine ring.

20. (*currently amended*) The radiopharmaceutical according to claim 16 wherein:

M is ¹¹¹In;

n is 3;

X is CH₂;

R¹ is H;

R² is methyl; and

R^3 and R^4 are taken together form a 6-membered cyclic **morphine morpholine** ring.

Claims 21 to 24 (*cancelled*)

25. (*currently amended*) A method of preparing a radiopharmaceutical of claim 16,

comprising the step of:

reacting a salt of said radionuclide with an excess of said N-substituted 3-hydroxy-4-pyridinone compound of the formula (I).

Claims 26 to 28 (*cancelled*)